

Application No. 10/593,480  
Reply to Office Action of December 17, 2008

Docket No.: 5706-0103PUS1

### **REMARKS**

Applicants thank the Examiner for the very thorough consideration given the present application. In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Claims 1-13 are now present in this application. Claim 1 is independent. Claims 1-6 and 8-12 have been amended. No new matter has been added. Reconsideration of this application, as amended, is respectfully requested.

### **Information Disclosure Citation**

Applicants thank the Examiner for considering the references supplied with the Information Disclosure Statement filed September 20, 2006, and for providing Applicants with an initialed copy of the PTO-SB08 form filed therewith.

### **Obviousness-Type Double Patenting Rejection**

Claims 1-13 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-11 of a copending U.S. Patent Application No. 10/579,194 in view of Zha et al. Applicants will address this provisional rejection when allowable subject matter is indicated.

### **Specification Objection**

The Examiner has objected to the specification because of minor informalities. In order to overcome this objection, Applicants have amended the specification to correct the deficiencies pointed out by the Examiner. Reconsideration and withdrawal of this objection are respectfully requested.

### **Claim Objections**

The Examiner has objected to the claims because they include reference characters which are not enclosed within parentheses. The Examiner has also objected to claim 12 because of

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minor informalities. In order to overcome this objection, Applicants have amended the claims to delete the reference characters. Further, claim 12 has been amended to recite, "wherein a connecting member for coupling the two submerged hollow fiber membranes modules is disposed on the air injection port," as suggested by the Examiner. Accordingly, reconsideration and withdrawal of these objections are respectfully requested.

**Rejection Under 35 U.S.C. § 112, 2<sup>nd</sup> Paragraph**

Claim 8 stands rejected under 35 U.S.C. § 112, 2<sup>nd</sup> Paragraph. This rejection is respectfully traversed.

Claim 8 has been amended to delete the feature, "wherein the diameter of the diffusion holes disposed on the diffusion tubes 11 increases by 10 to 100% as compared to the diameter of the diffusion holes disposed directly above," and to recite that "the closer the diffusion holes are to the lower part of the module, the larger the diffusion holes are." Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

**Rejections under 35 U.S.C. § 103**

Claims 1-7 and 11-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Selbie et al. in view of Zha et al. Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Selbie et al. in view of Zha et al., as applied to claims 1 and 6, and further in view of Cote et al. Claims 9 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Selbie et al. in view of Zha et al., as applied to claim 1, and further in view of Koenhen. These rejections are respectfully traversed.

Independent claim 1 has been amended to recite, among other features, that each pair of the at least two pairs of module headers has two module headers inserted into the two module bodies respectively through the corresponding hollow fiber membrane spaces, the two plate type diffusion layers are inserted into the two module bodies respectively, and each of the two plate type diffusion layers has diffusion tubes surrounding the bundle of hollow fiber membranes by three sides while being spaced apart by a predetermined distance from the module headers.

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These features are supported at least by Figs. 1, 3, 4 and 6 of the present application. For example, each pair of the at least two pairs of module headers has two module headers (see Figs. 4 and 5) inserted into the two module bodies (one on the left and the other on the right in Fig. 6) respectively through the corresponding hollow fiber membrane spaces 10. Further, for example, the two plate type diffusion layers (see Fig. 3) are inserted into the two module bodies respectively (one on the left and the other on the right in Fig. 6), and each of the two plate type diffusion layers has diffusion tubes 11 surrounding the bundle of hollow fiber membranes by three sides while being spaced apart by a predetermined distance from the module headers

The Office Action equates the module body of the present application to a casing 11 of Selbie et al. Selbie et al. teaches that each casing 11 that is inserted into its respective sleeve 56. On the contrary, in the claimed invention, each pair of the at least two pairs of module headers has two module headers inserted into the two module bodies, and thus each module body has at least two module headers. However, Selbie et al. does not disclose that at least two sleeves are inserted into a casing, but rather teaches that each casing has only one sleeve 56 (see Fig. 1 of Selbie et al.). Therefore, it is respectfully submitted Selbie et al. fails to teach or suggest that each pair of the at least two pairs of module headers has two module headers inserted into the two module bodies respectively through the corresponding hollow fiber membrane spaces, as recited in amended independent claim 1.

In addition, the Office Action correctly acknowledges that Selbie et al. does not disclose the diffusion layer of the claimed invention, and further relies on Zha et al. to allege that the combination of Selbie et al. and Zha et al. teaches this feature. The Office Action equates the diffusion layer of the claimed invention to the comb of tubes shown in Fig. 15 of Zha et al. Zha et al. teaches using the comb of tubes to output gas within the module (see paragraph [0013] of Zha et al.). However, Zha et al. fails to teach or suggest that the two plate type diffusion layers are inserted into the two module bodies respectively, and that each of the two plate type diffusion layers has diffusion tubes surrounding the bundle of hollow fiber membranes by three sides while being spaced apart by a predetermined distance from the module headers. Zha et al. does not disclose that two comb of tubes are inserted into two module bodies respectively. Further, Zha et al. does not disclose that the comb of tube surrounds the bundle of hollow fiber

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membranes by three sides while being spaced apart by a predetermined distance from the module headers. Therefore, Selbie et al., even when combined with Zha et al., does not teach or suggest these features of amended independent claim 1. Further, other cited references do not overcome these deficiencies of Selbie et al. and Zha et al.

Accordingly, it is respectfully submitted amended independent claim 1, and each of the claims depending therefrom, are allowable.

### Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Jun S. Ha, Registration No. 58,508, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By 

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